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ABSTRACT

This article reports results from a survey among women at risk for contracting Human Immunodeficiency Virus (HIV) as well as transmitting it in a vertical (to offspring) and horizontal (sexual partner or intravenous IV drug usage) mode. Little is known about the extent of HIV knowledge, sexual behaviors, and IV drug usage for women at risk for HIV infection. The sample consisted of Black, Caucasian, Hispanic, and Haitian adult non-pregnant women from South Florida. The women had an adequate knowledge base about HIV and Acquired Immune Deficiency Syndrome(AIDS), however the results indicated that the sample was at risk due to the following risk factors: (1) unprotected sexual intercourse, both vaginal and anal, with men who were at high risk for HIV infection; (2) IV drug usage by the women themselves, including needle sharing in "shooting galleries"; (3) the practice of prostitution by the women; and (4) the use of various non-IV drugs that have been shown to impair judgement and lower inhibitions regarding sexual practices. Results indicated differences in risk behaviors and knowledge about AIDS by race/ethnicity. (27 references) (LLL)

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Women at Risk for Human Immunodeficiency Virus

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Abstract

This article reports results from a survey among women at risk for contracting human immunodeficiency virus (HIV) as well as transmitting it in a vertical (to offspring) and horizontal (sexual partner or intravenous [IV] drug usage) mode. Little is known about the extent of HIV knowledge, sexual behaviors and IV drug usage for women at risk for HIV infection.

The sample (N=620) consisted of Black (50.6%), Caucasian (28.7%), Hispanic (13.4%) and Haitian (5.0%) adult non-pregnant women from South Florida. Data concerning their drug usage, sexual behaviors and other risk factors for HIV infection are presented along with their knowledge about HIV infection and acquired immunodeficiency syndrome (AIDS). The women had an adequate knowledge base about HIV and AIDS, however the results indicated that our sample was at risk due to the following risk factors: 1) unprotected sexual intercourse, both vaginal and anal, with men who were at high risk for HIV infection (i.e., men who were bisexual and/or used IV drugs); 2) IV drug usage by the woman themselves including needle sharing in "shooting galleries"; 3) the practice of prostitution by the women and; 4) the use of various non-IV drugs that have been shown to impair judgement and lower inhibitions regarding sexual practices. Results indicate differences in risk behaviors and knowledge about AIDS by race/ethnicity.

Acquired immunodeficiency syndrome (AIDS) cases associated with heterosexual intravenous (IV) drug use, heterosexual contact, and perinatal transmission continued to increase, while cases related to blood transfusions and treatment of hemophilia showed decreases (CDC, 1990a). Cases diagnosed among homosexual/bisexual men continued to increase, but not as rapidly as in past years (CDC, 1990a). Approximately 39 percent of the adult AIDS cases occur in Black or Hispanic individuals in the United States (CDC, 1990b) and 50% in Florida (HRS, 1990). Black and Hispanic infants account for approximately 80 percent of the total of newborns who eventually develop AIDS in the United States (Rogers and Williams, 1987; CDC, 1990b) and 87% in Florida.

The virus associated with AIDS is the human immunodeficiency virus (HIV) (Marx, 1984) and most commonly, infection with the virus is determined by the presence of HIV antibodies (Gallo et al., 1985). AIDS is a life-threatening manifestation of infection with the HIV (CDC, 1990a).

As the blood supply becomes safer, it is projected that virtually all future pediatric AIDS cases (13 years of age and younger) will result from infection acquired from an HIV-positive mother (Brooks-Gunn et al., 1988). Clearly, prevention of HIV infection in children requires prevention of HIV infection in women and prevention of pregnancy in infected women (Rogers and Williams, 1987).

Women in the United States comprise approximately 9.4 percent of all AIDS cases (CDC, 1990a and b) and among these women, 79

percent are between the ages of 13 and 39, the primary childbearing years (Guinan and Hardy, 1987; and Wofsy, 1987). Nationally, the major mode of HIV infection in women is via IV-drug use (52 percent) followed by heterosexual transmission (30 percent) (CDC, 1990b; Guinan and Hardy, 1987). In the state of Florida IV-drug use accounts for 43 percent of female cases of AIDS and heterosexual transmission is the route for 42 percent of the reported AIDS cases (HRS, 1990). It is important to note that intramuscular, subdermal or intraperitoneal injections can also transmit the virus.

Florida ranks third in the nation in the number of adult AIDS cases in women (CDC, 1990b) and recent efforts to estimate the prevalence of seropositivity within the state indicate wide geographic variability. The percent of seropositivity from two counties in Florida hardest hit by the AIDS epidemic range from 0.3 (Broward) to 0.8 percent (Dade) while the seropositive rate for the entire state is 0.04 percent (Kleiman and Day, 1987)

Since there is very little information on the extent of HIV and AIDS knowledge, sexual behaviors and IV drug usage for women at risk for HIV infection (Reinisch et al., 1988; Cochran, 1989) the purpose of this study was to define and describe the knowledge, attitudes and behaviors of a group of women of childbearing age who were at high risk for contracting as well as transmitting HIV in Florida. This risk of transmission is both a vertical and lateral one. Once identified the group will be used to evaluate intervention strategies aimed at the prevention of perinatal AIDS.

Method

Subject recruitment and interviews

The women in this study were from Dade and Broward counties in southern Florida and were recruited from county jails and detention centers (59.2 percent), community programs such as county public health units and health centers (26.1 percent), alcohol/drug treatment centers (13.6 percent) and the remaining 1.1 percent from miscellaneous sources.

Each woman in the study was interviewed during July through September 1989 by staff hired by the County Public Health Units in the respective counties and the interviewers were trained by faculty and staff of the Florida State University School of Social Work. Each woman was interviewed by an individual fluent in the language of the subject. Most interviews (96%) were conducted at the site of recruitment. The women were asked about their living arrangements and activities in the past month (4 weeks) or the during the last month (4 weeks) prior to their entry into a jail, detention or drug treatment center.

The interview consisted of questions taken from two sources. The majority of items were developed by the Centers for Disease Control and the rest of the interview items were developed by the authors in conjunction with the State of Florida's Health and Rehabilitative Services Department. The interview instrument was organized into nine sections, each focussing upon a particular topic. The nine sections addressed: 1) respondents social and demographic characteristics; 2) pregnancy history; 3) use of

contraception; 4) sexual behavior; 5) medical history; 6) HIV knowledge and gender-role attitudes, 7) drug use history; 8) behavior change (s) since acquiring information about AIDS and; 9) health service preferences.

Subjects

The respondents in the study were divided into five racial-ethnic categories and four age categories for the purposes of analysis. The racial-ethnic categories were: American white ("white"), American black ("black"), Hispanic, Haitian and Other. Of the respondents, 28.7% were white, 50.6% were black, 13.4% were Hispanic, 5.0% were Haitian, and the remainder (2.3%) fell into an "Other category" which consisted of a heterogenous group of group (i.e., Asians, Native Americans etc.). The total sample included 620 nonpregnant women.

The women were divided into the following age categories: 1) 18-20; 2) 21-30; 3) 31-40 and; 4) 41 years of age and older. The mean age of the respondents was 28.9 years (age range 18-53) and the youngest and oldest groups comprise the smallest numbers at 9.4% and 6.0% respectively. The women in the 21-30 age range comprised 51.9% of the entire sample.

Slightly more than one-half (50.6%) of all respondents reported never having been married, with blacks having a much lower first marriage rate (34.1%) compared to the other racial-ethnic categories (Chi square=64.12, df=3, $p<0.0001$). The first marriage rate for was 62.7% for whites, 68.7% for Hispanics and 77.4% for Haitians. Eighteen percent of the respondents were married at the

time of the interview and this includes 36.6% of the ever married women.

While slightly more than one-half of the sample reported never having been married, 74.9% reported having at least one pregnancy which resulted in the birth of a child. Almost sixty percent (59.6%) of those having children (44.5% of the total sample) reported having at least one child residing with them at the time of the interview.

The average number years of schooling (including those with a graduate equivalency degree-GED) for the sample was 10.7 with whites having the highest educational levels followed in order by Blacks, Haitians and Hispanics.

In terms of employment status, 45.2% of the respondents reported being unemployed and this figure is close to the national figure of 45% (Hacker, 1986). Those women that were employed worked most frequently in the service sector (36.8%) in jobs such as food service, dental assistant, maid, childcare etc., but was followed closely by those women acknowledging illegal activities including prostitution.

Data entry and analysis

The interviews were prepared for data entry using codes for the majority of items, i.e., zero/one codes were used for no/yes items and simple scalar coding was used with items concerned with the extent or degree of agreement with statements of fact or opinion and with those concerned with the frequency of behaviors.

Data were entered onto diskettes of microcomputers using

DATASTAR, a WORDSTAR program which produces data files in a field-free format. Data were analyzed using the Statistical Package for Social Sciences (SPSS). The two procedures used most commonly in analyses were CROSSTABS and BREAKDOWN. The tests of statistical significance associated with these tabulation procedures are Chi-square and one-way analysis of variance, respectively. In addition multiple regression analyses were used to determine the amount of variance in HIV status and condom usage accounted for by race/ethnicity, recruitment sites, age, education and prostitution.

One additional comment is warranted with regard to the use of one-way analysis of variance (ANOVA) to test the significance of differences in proportions (e.g., use/non-use of IUD) between categories of respondents. That is, although use of dichotomous dependent variables must be acknowledged as a formal violation of the requirements of normal distribution and constant variance associated with the general linear model upon which ANOVA is based, as Cohen and Cohen (1983) have noted, "...in practice, and with support from central limit theorem and empirical studies, dichotomous dependent variables are usefully employed in multiple regression/correlations (pp. 240-241)."

This study was limited by the fact that we relied on a purposive rather than a random sample to generate a sample of women at high risk for HIV infection. Another limitation was that the reliability and validity of the questionnaire are unknown. While interviewers were trained to cross-check for inconsistencies, to

attempt clarification of responses and to record their prompts to the respondent, caution must be used in interpreting the findings. In particular, the problems inherent in self-reported data based upon recall regarding illegal and/or socially sanctioned activities add an additional problem to the data set (Reinish, Sanders and Ziemba-Davis, 1988).

Results

Sixty-three percent (63.7%) of the women involved in the present study had been tested for HIV antibodies. Of this group, 54 tested positive for HIV antibodies. This represents 8.7 percent of the total sample of women in the study and 13.7 percent of those who were tested for HIV antibodies. This is a high percentage of seropositivity when compared to other men and women in these same counties in Florida which range from 0.3 to 0.8 percent (Kleiman and Day, 1987). In terms of HIV status and race/ethnicity it was found that only one percent of the variance in HIV status could be accounted for by race/ethnicity and six percent by site of recruitment. Other variables including age, education level and prostitution did not account for a significant amount of the variance seen in HIV status.

A total of 65.8% of the sample indicated that they had used a condom at some point in their lives, but at the time of this study, 71.9% of the respondents who had had vaginal or anal intercourse in the past four weeks with their main sexual partner reported "never using a condom." A small percentage (13.5%) of these women reported engaging in anal intercourse with their main sexual

partner in the past month and the use of condoms during oral sex with the main sexual partner was a rare event (6.6%). The majority of women reported a current main sexual partner (73.5%) and an additional 8.1% had had a main sexual partner in the preceding four weeks.

Regression analyses revealed that race/ethnicity accounted for only four percent of the total variance in condom usage with the main sex partner and recruitment site only accounted for an additional 1.5 percent of total variance in condom usage with main sex partner. In terms of condom usage with men other than main sex partners, including clients in prostitution, both race/ethnicity and site of recruitment each accounted for slightly less than ten percent of the variance observed in condom usage. The variables of age, education and participation in prostitution did not contribute significantly to the variance seen in condom usage with either main sex partner or other partners.

Almost all women (92.3%) listed a male as their main sexual partner and 13.6% percent of the women with a current main sexual partner indicated that he used IV drugs (10.2% of the total sample) with an additional 3.0% uncertain regarding their partner's history of IV drug usage. White women in the age range of 21-40 accounted for 57.1% of the women who had partners that were using IV drugs. There were significant differences ($F=12.98$, $df=3,431$; $p<0.0001$) in the racial/ethnic distribution of heterosexual women with current main sexual partners whose partners had a known history of IV drug usage: Whites (28.7%), Blacks (6.9%), Hispanics (15.2%) and

Haitians (0%).

Racial-ethnic groups of all ages indicated that they used all three categories of hard drugs- crack, powdered cocaine and IV drugs (49.4% of total sample). There were significant differences in drug usage by racial/ethnic groups with two-thirds of White respondents (62.9%) reported using one or more of the above mentioned drugs within the past month, by comparison to 54.2% of Hispanics, 44.6% of Blacks and 9.7% of Haitians (Chi-square=36.3, df=3, $p<0.0001$). There were also significant differences (Chi-square=19.2, df=3, $p<0.0003$) by age concerning drug use with the older groups more likely to use drugs: 20 and under= 25.9%; 21-30= 50.3%; 31-40= 56.7% and; 41 and older= 37.8%.

A total of 137 women responded to the question of whether they or not they had injected drugs in the past six months. In response to the question, 33% (N=45) indicated that they did use IV drugs. White women more likely to use drugs of any kind and they were also more likely to report not using clean needles while injecting IV drugs. Nine women in the study indicated that they used IV drugs and did not use clean needles during the act of injecting the drug. Eight of these women were White (4.5% of entire sample) and one was Hispanic (1.2% of entire sample). None of the Black or Haitian women reported engaging in this type of behavior.

The above cited differences in the use of drugs by racial-ethnic groupings is found in all age groups with the exception of the oldest age group. In the oldest group of women over the age of 41, the proportion of black women exceeds white women in terms of

drug usage. Haitian women were the least likely to use drugs in all age categories.

The use of non-IV drugs (cocaine ingested either through smoking or snorting) is much more common: (44.7%) of the sample used non-IV drugs in past month compared to 4.7% percent using IV drugs in past month. In addition to the use of crack, powdered cocaine and IV drugs a large percentage of women in this study used other psychoactive substances. Alcohol was the most common substance for the women to have at least tried (90.3%) followed by marijuana (77.6%), powdered cocaine (70.0%), crack cocaine (62.3%), and IV drugs (22.4%). In terms of daily consumption by subjects in the sample at the time of the interview, crack cocaine was used most often (29.4%), followed by alcohol (23.1%), marijuana (11.9%), powdered cocaine (9.0%) and IV drugs (2.4%).

A question of interest dealt with who makes the decision to use or not use a condom when sexual intercourse (vaginal or anal) occurred between the respondent and her main sexual partner. No clear trends were evident, but in the age group of 21-30 (96 women responded) there was a tendency for both partners to share in the decision.

A total of 43.7% of the entire sample had engaged in prostitution either for money, drugs or both at some point in their lives and 29.7% of the sample acknowledged engaging in prostitution in the past four week. Of the women who ever engaged in prostitution; 6.6% accepted payment in drugs exclusively; 35.8% accepted payment in money exclusively and 57.6% have traded sex for

money and drugs. Significant differences in racial/ethnic distribution in terms of prostitution were found with Haitians the least likely to engage in prostitution (3.2%) compared to 48.3% for Whites, 44.9% for Blacks and 44.6% for Hispanics (Chi-square= 22.4, df=3, $p < 0.0001$). Significant differences in age distribution was also found with the youngest group the least likely to engage in prostitution: 20 and under= 20.7%; 21-30=48.1%; 31-40=43.8% and 41 and older=40.5% (Chi-square= 15.2, df=3, $p < 0.0016$). This age distribution was pronounced for Blacks and Hispanics, but not for Whites.

The subjects in the study were placed into six risk categories for HIV infection (Table 1). It can be seen that white women represent 56% (45/80), 61% (85/139) and 56% (25/44) of the women listed in the risk categories of "partner shooting drugs", "woman herself shooting drugs" and "woman herself shooting drugs in a shooting gallery", respectively. In the remaining three risk categories, black women represent the majority. Significant differences existed in terms of race/ethnicity for partner using IV drugs (Chi-square=30.68, df=3, $p < 0.0001$) and for partner being in the category of HIV positive (Chi-square= 8.37, df=3, $p < 0.038$). A significant difference also existed by race/ethnicity for syphilis (Chi-square= 40.18, df=3, $p < 0.0001$). The trends seen in Table 1 indicate that White women are more likely to be at risk for IV drug usage and Black women more likely to be at risk with an ulcerative sexually transmitted disease.

There were 11 items in the interview dealing with knowledge

about HIV and AIDS in terms of transmission and protective measures against the disease. The majority of women answered most of the items correctly, particularly those items that dealt with sexual and needle sharing-modes of transmission. However, the majority (73.5%) of the respondents did not know that bleach could clean dirty needles. A very large percentage (98.7) answered correctly the statement that, "A pregnant woman who has the AIDS virus can give it to her baby".

When the knowledge questions were combined and a score computed for correctness of responses it was found that the number of years of schooling did not increase one's knowledge about HIV and AIDS (Chi square= 6.77, 6 df, $p < 0.34$). Age also did not contribute to correct knowledge about HIV and AIDS (Chi square= 6.1, 6 df, $p < 0.40$). However, race-ethnicity was an important variable in terms of correct knowledge about HIV and AIDS. A highly significant difference was found here (Chi square= 29.5, 6 df, $p < 0.0001$) with Whites scoring the highest in terms of correct knowledge (80.3% scored in the highest knowledge category we created), followed by Hispanics (65.1 in highest category) Blacks (58.9% in highest category) and Haitians (45.2 in highest category).

Discussion

The subjects in this study represent a group of women at risk for contracting and transmitting the virus in both a vertical and horizontal manner. The vertical mode of transmission exists due to the fact that many are in the childbearing years. The potential

children of infected women are at risk of contracting HIV infection in utero, during parturition or through breast milk (CDC, 1985). The horizontal mode of transmission is a reality due to the sexual practices and drug usage of both the women in the sample and their sexual partners (Francis and Chin, 1987; Guinan and Hardy, 1987; Haverkos and Edelman, 1988).

The interview results indicated that behavior patterns such as intravenous drug usage, sexual practices and prostitution placed the women in this study "at risk" for HIV infection and accounted for the high percentage of seropositive women in this study.

Sixty-three percent of the women involved in the present study had been tested for HIV antibodies and 13.7 percent were seropositive. This is a high percentage of seropositivity when compared to other individuals in the same counties in Florida which range from 0.3 to 0.8 percent (Kleiman and Day, 1987).

The sample of women was disproportionately represented by minority groups. Sixty-four percent of the sample was Black or Hispanic, while Black and Hispanics only comprise 25 percent of the population of Florida (Center for Study of Population, Florida State University, 1990).

The high percentage of seropositive women in this study can be explained by the behaviors that put them at risk for HIV infection. A total of 13.6 percent of the women with a current main sexual partner indicated that he used IV drugs. White women in the age range of 21-40 years accounted for 57.1 percent of the women whose partners used IV drugs. Significant racial/ethnic differences

existed in terms of having a partner that used IV drugs with 28.7% of Whites having a partner that had a history of IV drug usage followed by Hispanics (15.2%), Blacks (6.9%) and Haitians (0%).

In addition to engaging in sexual activities with a partner at risk for HIV, condom usage was low. This was especially true for sex with a main partner (71.9% of respondents never used condoms during vaginal or anal sex). Sex with a client in the case of prostitution indicated greater condom usage. Hispanic women were the least likely to use a condom with a client (28.9%) followed by White women (19.1%), Black women (17.2%) and Haitian women (3.2%)

Significant racial/ethnic differences existed for drug usage by the subjects themselves with two-thirds (62.9%) of the White respondents reported using either crack cocaine, powdered cocaine or IV drugs (one or more of these three categories) within the past month as compared to 54.2% of Hispanics, 44.6% of Blacks and 9.7% of Haitians.

White women were more likely to report injecting drugs and using unclean needles when compared to the other racial/ethnic groups. While the sample size is very small, these findings are in disagreement with the findings of others in which ethnic minorities are disproportionately represented among IV drug users (Guinan and Hardy, 1987). In our sample, White women were the group most likely to have sexual intercourse with an IV drug user and to use IV drugs themselves. Thus, while White women possessed the greatest amount of knowledge about AIDS compared to the other racial/ethnic groups this knowledge did not translate into safe behaviors in terms of

sexual behaviors and IV drug usage. This is consistent with studies of adolescent and college-aged individuals in which the knowledge base about AIDS is high, but risky sexual behaviors are still practiced (Kegeles, Adler and Irwin, 1988; Becker and Joseph, 1988; Edgar, Greimuth and Hammond, 1988; Brooks-Gunn, Boyer and Hein, 1988).

It has been shown that the use of any psychoactive substance contributes to high risk behaviors as related to HIV transmission (Stall et al., 1986; Siegel et al., 1989). Psychoactive substances refer to any drug (prescription or non-prescription) that is mood-altering. Thus, psychoactive substances include both legal (e.g., alcohol) and illegal (e.g., marijuana, cocaine, heroin) drugs (see Wambach et al., 1990 for a detailed discussion of drug usage by the women in this sample). A large percentage of women in this study used psychoactive substances and our sample is clearly using psychoactive substances which impair judgement and lower inhibitions which combine to place the women at risk for unsafe sexual behaviors and risky IV drug usage.

The group most likely to engage in prostitution in exchange for money or drugs was the 21-30 year old group. A fairly even distribution of racial-ethnic groups was represented in this age grouping. At the time of the interview, 71.9 percent of all respondents reported, "never using a condom during vaginal or anal intercourse" with their main sexual partner or with a client during prostitution. Hence, the high risk behaviors of prostitution and/or having sexual intercourse with a IV drug user without the use of a

condom place these women at high risk for HIV infection.

Other behaviors that placed the women in this sample at risk for HIV infection are contained in Table 1. These included having a sexual partner who was HIV seropositive or a male partner who had been tested for HIV antibodies and refused to tell his female partner the results. The presence of ulcerative sexually transmitted diseases such as syphilis and genital herpes has been hypothesized as a cofactor in HIV transmission and as an explanation for the increased risk for HIV infection among heterosexuals in Africa (Cameron, Plummer and Simonsen, 1987; Greenblatt et al., 1987), and 33% of the women in this study had at one point in time been diagnosed as having syphilis (Table 1).

Regression analyses clearly indicated that neither race/ethnicity, site of recruitment nor any other variables such as age, education level or participation in prostitution examined accounted individually for more than ten percent of the variation observed in HIV status and condom usage with main sex partner or other sex partners. Thus, 90 percent of the variance remains unexplained.

In summary, the women in this study are clearly at risk for contracting and transmitting HIV in both and lateral and vertical manner. Their risk factors include: 1) unprotected sexual intercourse, both vaginal and anal, with men who are at high risk for HIV infection (i.e., men who are bisexual and/or IV drug users); 2) IV drug usage by the women themselves; 3) the practice of prostitution by the women and; 4) the relatively high use of

non-IV drugs that has been shown to impair judgement and lower inhibitions regarding sexual practices. Their knowledge base about AIDS and HIV was adequate with the notable exception that they did not know that bleach could be used to clean a needle. The fact that minority groups are disproportionately represented the present sample as well as giving birth to the great majority of HIV infected infants in the United States and Florida indicates that intervention strategies must be targeted at these groups.

Any intervention strategies in a sample such as the present one must take into account differences in sexual practices, drug usage and knowledge about AIDS and HIV in specific racial/ethnic groups. The interventions must be tailored to each group and focus on risk perceptions and attitudes and skills needed to negotiate safer behaviors (Fisher, 1988).

References

- Becker, M. and Joseph, J. 1988. AIDS and behavioral change to reduce risk: A review. American Journal of Public Health. 78: 394-410.
- Brooks-Gunn, J., Boyer, C. and Hein, K. 1988. Preventing HIV infection and AIDS in children and adolescents. American Psychologist. 43: 958-964.
- Cameron, D., Plummer, G. and Simonsen, J. 1987. Female to male heterosexual transmission of HIV infection in Nairobi. Presented at the Third International Conference on AIDS, Washington, D.C., June 1, 1987.
- Center for Study of Population. Florida State University. 1990.
- Centers for Disease Control (CDC). 1985. Recommendations for assisting in the prevention of perinatal transmission of HTLV/LAV and AIDS. Morbidity and Mortality Weekly Review. Vol. 34.
- Centers for Disease Control (CDC). 1990a. Update: Acquired Immunodeficiency Syndrome-United States, 1989. Morbidity and Mortality Weekly Review. Vol. 39.
- Centers for Disease Control (CDC). 1990b. HIV/AIDS Surveillance Report. July 1990: 1-18.
- Cochran, S. 1989. Women and HIV infection: Issues in prevention and behavior change. In: V. Mays, G. Albee and S. Schneider (Eds.), Primary Prevention of AIDS: Psychological Approaches. Newbury Park, California. Sage Publications. pp. 309-327.

- Cohen, J. and Cohen, P. 1983. Applied Multiple Regression/Correlation Analysis for the Behavioral Sciences. (2ed Ed.) Hillsdale, N.J. Lawrence Erlbaum Associates.
- Edgar, T., Freimuth, V. and Hammond, S. 1988. Communicating the AIDS risk to college students: The problem of motivating change. Health Education Practice 3: 59-65.
- Fisher, J. 1988. Possible effects of reference group-based social influence on AIDS-risk behavior and AIDS prevention. American Psychologist . 43: 914-920.
- Francis, D. and Chin, J. 1987. The prevention of acquired immunodeficiency syndrome in the United States. Journal of the American Medical Association. 257: 1357-1366.
- Gallo, R., Shaw, G. and Markham, P. 1985. The Etiology of AIDS. IN: AIDS: Etiology, Diagnosis, Treatment and Prevention. J.B. DeVita, V., Hellman, S., and Rosenberg, S. (Eds.). Lippincott. New York. pp. 31-54.
- Greenblatt, R. et al. 1987. Genital ulceration as a risk factor for human immunodeficiency virus in Kenya. Presented at the Third International Conference on AIDS, Washington, D.C., June 1, 1987.
- Guinan, M. and Hardy, A. 1987. Epidemiology of AIDS in women in the United States, 1981-1886. Journal of the American Medical Association. 257-2039-2042.
- Hacker, A. 1986. Women at Work. The New York Review. Aug. 14. pp. 26-32.
- Health and Rehabilitative Services (HRS). July 1, 1990. The

Florida AIDS/HIV Report. Number 65.

- Haverkos, h. and Edelman, R. 1988. The epidemiology of acquired immunodeficiency syndrome among heterosexuals. Journal of the American Medical Association. 260: 1922-1929.
- Kegeles, S., Adler, N. and Irwin, C. 1988. Sexually active adolescents and condoms: Changes over one year in knowledge, attitudes and use. American Journal of Public Health. 78: 460-461.
- Kleiman, M. and Day, N. 1987. Heterosexuals and the acquired immunodeficiency syndrome: Estimating the prevalence of seropositivity among Florida females. Journal of the Florida Medical Association. 74: 183-185.
- Reinisch, J., Sanders, S. and Ziemba-Davis, M. 1988. The study of sexual behavior in relation to the transmission of human immunodeficiency virus: Caveats and recommendations. American Psychologist 43: 921-927.
- Rogers, M. and Williams, W. 1987. AIDS in Blacks and Hispanics: Implications for prevention. Issues in Science and Technology. Spring, 89-94.
- Marx, J. 1984. Strong new candidate for AIDS agent. Science. 224: 475-477.
- Siegel, K., Mesagno, F. Chen, J. and Christ, G. 1989. Factors distinguishing homosexual males practicing risky and safer sex. Social Science and Medicine. 28: 561-569.
- Stall, R., McKusick, L., Wiley, J., Coates, T. and Ostrow, D. 1986. Alcohol and drug use during sexual activity and

compliance with safe sex guidelines for AIDS: The AIDS Behavioral Research Project. Health Education Quarterly. 13: 359-371.

Wambach, K., Byers, J., Harrison, D., Levine, P., Imershein, A., Quadagno, D. and Maddox, K. 1990. Substance use among women at risk for HIV infection. Submitted.

Wofsy, C. 1987. Human immunodeficiency virus infection in women. Journal of the American Medical Association. 257: 2074-2076.

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